AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently amended) A method comprising:

determining a slack value based on current resource constraints, for each of one or more ready instructions in a scheduling region ~~based on resource constraints~~;

selecting one of the ready instructions, based on the slack value; ~~and~~

scheduling the selected ready ~~instruction.~~ instruction; and

repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.

2. Canceled.

3. (Currently amended) The method of claim 1, wherein[[:]] determining [[a]] the slack value ~~for each of the one or more ready instructions further comprises~~ comprises:

determining the slack value for ~~the~~ each of the one or more ready instructions based on resource constraints and dependence height.

4. (Currently amended) The method of claim 1, wherein determining [[a]] the slack value ~~further~~ comprises:

determining a dependence deadline based on a dependence height for ~~the~~ each of the one or more ready instructions;

determining a resource deadline based on resource constraints for ~~the~~ each of the

one or more ready instructions;

selecting as a deadline value that indicates a least number of cycles, between the resource deadline and the dependence deadline ~~to choose a deadline value that indicates a least number of cycles~~; and

determining the slack value based on the selected deadline value.

5. (Currently amended) The method of claim 1, wherein[[:]] selecting one of the ready instructions ~~further~~ comprises selecting [[a]] the ready instruction having a lowest slack value.

6. (Original) The method of claim 1, further comprising:

generating an entry in a ready list for each of the one or more ready instructions; and

removing the entry for the selected ready instruction from the ready list.

7. (Currently amended) The method of claim 6, further comprising:

adding to an uncover list any non-ready instructions uncovered by the scheduling of the selected ready instruction.

8. (Currently amended) The method of claim 6, further comprising:

advancing a virtual clock to a subsequent clock cycle when there are no ready instructions in the ready list that can be scheduled in a clock cycle; and

adding an entry to the ready ~~for~~ list for any non-ready instruction that becomes

ready in the subsequent clock cycle.

9. (Currently amended) The method of claim ~~1~~ 4, ~~further comprising~~ wherein determining the slack value comprises:

determining a minimum number of cycles needed to schedule ~~the~~ each of the one or more ready instructions ~~of a~~ in the scheduling region, taking resource constraints into ~~account.~~ account;

determining the dependence deadline based on the dependence height and the minimum number of cycles; and

determining the resource deadline based on resource constraints and the minimum number of cycles.

10. (Currently amended) The method of claim 9, wherein[[:]] determining the minimum number of cycles comprises:

~~is determined to be a dependence length of the scheduling region if the scheduling region is dependence-bound; and~~

~~the minimum number of cycles is determined to be a resource length of the scheduling region if the scheduling region is resource-bound.~~

determining a dependence length of the scheduling region;

determining a resource length of the scheduling region;

assigning the dependence length as the minimum number of cycles when the dependence length is greater than the resource length; and

assigning the resource length as the minimum number of cycles when the resource

length is greater than the dependence length.

11. (Original) The method of claim 10, further comprising:

calculating the dependence length of the scheduling region based on the total height of a dependence graph of the scheduling region; and

calculating the resource length of the scheduling region based on the maximum number of cycles needed to schedule the instructions of the scheduling region for a machine resource.

12. (Currently amended) The method of claim 1, wherein[[:]] the resource constraints ~~include~~ comprise the maximum number of instructions of a particular instruction type that can be scheduled during a given cycle for a ~~selected~~ target processor.

13. (Currently amended) An article comprising:

a ~~storage~~ computer readable medium having a plurality of machine accessible instructions stored thereon, which ~~if~~ when executed by a ~~machine~~ computer, cause the ~~machine~~ computer to perform the following ~~operations~~ method:

determining a slack value based on resource constraints, for each of one or more ready instructions in a scheduling region ~~based on resource constraints~~;

selecting one of the ready instructions, based on the slack value; ~~and~~

scheduling the selected ready ~~instruction.~~ instruction; and

repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready

instructions have been scheduled.

14. Canceled.

15. (Currently amended) The ~~article~~ medium of claim 13, wherein ~~the instructions, which if executed by a machine, cause the machine to perform~~ determining [[a]] the slack value ~~further~~ comprises ~~instructions, which if executed by a machine, cause the machine to perform~~:

determining the slack value for ~~the~~ each of the one or more ready instructions based on resource constraints and dependence height.

16. (Currently amended) The ~~article~~ medium of claim ~~15~~ 13, wherein ~~the instructions, which if executed by a machine, cause the machine to perform~~ determining [[a]] the slack value ~~further~~ comprises ~~instructions, which if executed by a machine, cause the machine to perform~~:

determining a dependence deadline based on a dependence height for ~~the~~ each of the one or more ready instructions;

determining a resource deadline based on resource constraints for ~~the~~ each of the one or more ready instructions;

selecting as a deadline value that indicates a least number of cycles, between the resource deadline and the dependence deadline ~~to choose a deadline value that indicates a least number of cycles~~; and

determining the slack value based on the selected deadline value.

17. (Currently amended) The ~~article~~ medium of claim 13, wherein[[:]] ~~instructions that cause the machine to perform~~ selecting one of the ready instructions ~~further~~ comprises ~~instructions, which if executed by a machine, cause the machine to perform~~ selecting a ready instruction having a highest scheduling priority.

18. (Currently amended) The ~~article~~ medium of claim 13, ~~wherein the plurality of instructions~~ further ~~comprise instructions, which if executed by a machine, cause the machine to perform~~ comprising:

generating an entry in a ready list for each of the one or more ready instructions; and

removing the entry for the selected ready instruction from the ready list.

19. (Currently amended) The ~~article~~ medium of claim 18, ~~wherein the plurality of instructions~~ further ~~comprise instructions, which if executed by a machine, cause the machine to perform~~ comprising:

adding to an uncover list any non-ready instructions uncovered by the scheduling of the selected ready instruction.

20. (Currently amended) The ~~article~~ medium of claim 18, ~~wherein the plurality of instructions~~ further ~~comprise instructions, which if executed by a machine, cause the machine to perform~~ comprising:

advancing a virtual clock to a subsequent clock cycle when there are no ready instructions in the ready list that can be scheduled in a clock cycle; and

adding an entry to the ready ~~for~~ list for any non-ready instruction that becomes ready in the subsequent clock cycle.

21. (Currently amended) The ~~article~~ medium of claim ~~13~~ 16, ~~wherein the plurality of instructions further comprise instructions, which if executed by a machine, cause the machine to perform~~ wherein determining the slack value comprises:

determining a minimum number of cycles needed to schedule ~~the~~ each of the one or more ready instructions ~~of a~~ in the scheduling region, taking resource constraints into ~~account.~~ account;

determining the dependence deadline based on the dependence height and the minimum number of cycles; and

determining the resource deadline based on resource constraints and the minimum number of cycles.

22. (Currently amended) The ~~article~~ medium of claim 21, ~~wherein the plurality of instructions~~ further ~~comprise instructions, which if executed by a machine, cause the machine to perform~~ wherein determining the minimum number of cycles comprises:

~~determining the minimum number of cycles to be a dependence length of the scheduling region if the scheduling region is dependence-bound; and~~

~~determining the minimum number of cycles to be a resource length of the scheduling region if the scheduling region is resource-bound.~~

determining a dependence length of the scheduling region;

determining a resource length of the scheduling region;

assigning the dependence length as the minimum number of cycles when the dependence length is greater than the resource length; and

assigning the resource length as the minimum number of cycles when the resource length is greater than the dependence length;

23. (Currently amended) The ~~article~~ medium of claim 22, ~~wherein the plurality of instructions~~ further ~~comprise instructions, which if executed by a machine, cause the machine to perform~~ comprising:

calculating the dependence length of the scheduling region based on the total height of a dependence graph of the scheduling region; and

calculating the resource length of the scheduling region based on the maximum number of cycles needed to schedule the instructions of the scheduling region for a machine resource.

24. (Currently amended) The ~~article~~ medium of claim 13, wherein[[:]]

the resource constraints ~~include~~ comprise the maximum number of instructions of a particular instruction type that can be scheduled during a given cycle for a ~~selected~~ target processor.

25. (Currently amended) A compiler comprising:

a front end to receive a source code; and

a code generator, coupled to the front end, to:

receive the source code from the front end; and

compile the received source code into an object code,

wherein the code generator includes one or more resource-aware schedulers ~~to~~ to: ~~schedule instructions, the one or more resource-aware schedulers to take resource constraints into account to generate a slack value for each of the instructions.~~

determine a slack value based on current resource constraints, for each of one or more ready instructions in a scheduling region;

select one of the ready instructions, based on the slack value;

schedule the selected ready instruction; and

repeat the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.

26. (Currently amended) The compiler of claim 25, wherein[[:]] ~~said~~ the one or more resource-aware schedulers ~~is further to~~ are to:

determine a first scheduling deadline for ~~an~~ for each of the one or more ready instructions in [[a]] the scheduling region, taking dependence considerations into account; ~~and~~

~~said one or more resource-aware schedulers is further to~~ determine a second scheduling deadline for ~~the~~ for each of the one or more ready instructions, taking

resource constraints into account; and

~~said one or more resource-aware schedulers is further to~~ select as a scheduling priority for each of the one or more ready instructions, between the first and second scheduling deadlines ~~to choose a scheduling priority for the instruction~~.

27. Canceled.

28. (Currently amended) The compiler of claim 26, wherein[[:]] ~~said~~ the one or more resource-aware schedulers are ~~is further~~ to select the instruction for scheduling based on its scheduling priority.

29. (Currently amended) The compiler of claim 25, wherein[[:]] ~~said~~ the resource constraints ~~include~~ comprise a maximum number of instructions that can be scheduled per cycle.

30. (Currently amended) The compiler of claim 25, wherein[[:]] ~~said~~ the resource constraints include the maximum number of instructions of a particular instruction type that can be scheduled per cycle.

31. (Currently amended) The compiler of claim 25, wherein[[:]] the one or more resource-aware schedulers are ~~is further~~ to schedule the instructions such that instructions of a particular instruction type are distributed evenly among two or more resources.

32. (Currently amended) A system comprising:

a processor to execute each of one or more ready instructions; and

a memory system, coupled to the processor, to store each of the one or more ready instructions;

wherein the instructions include a resource-aware scheduler ~~to~~ to: ~~determine, based on resource constraints, a slack-based scheduling priority for each of one or more instructions.~~

determine a slack value based on current resource constraints, for each of the one or more ready instructions in a scheduling region;

select one of the ready instructions, based on the slack value;

schedule the selected ready instruction; and

repeat the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.

33. (Currently amended) The system of claim 32, wherein:

the memory system includes a Dynamic Random Access Memory (DRAM).

34. (Currently amended) The system of claim 32, wherein[[:]] ~~said~~ the resource-aware scheduler is ~~further to~~ to:

determine a first scheduling deadline for ~~an~~ each of the one or more ready instructions in [[a]] the scheduling region, taking dependence considerations into account; ~~and~~

~~said resource-aware scheduler is further to~~ determine a second scheduling deadline for ~~the~~ each of the one or more ready instructions, taking resource constraints into account; and

~~said resource-aware scheduler is further to~~ select a scheduling priority for the instruction, between the first and second scheduling deadlines ~~to determine the scheduling priority for the instruction~~.

35. Canceled.

36. (Currently amended) The system of claim ~~35~~ 34, wherein[[:]] ~~said~~ the resource-aware scheduler is ~~further~~ to select the instruction for scheduling based on its scheduling priority.

37. (Currently amended) The system of claim 32, wherein[[:]] ~~said~~ the resource constraints include a maximum number of instructions that can be scheduled per cycle.

38. (Currently amended) The system of claim 32, wherein[[:]] ~~said~~ the resource constraints include the maximum number of instructions of a particular instruction type that can be scheduled per cycle.